



## How AI localisation in plant tissues determines the targeted pest spectrum of different chemistries

**Buchholz, Anke; Trapp, Stefan**

*Publication date:*  
2014

[Link back to DTU Orbit](#)

*Citation (APA):*

Buchholz, A., & Trapp, S. (2014). *How AI localisation in plant tissues determines the targeted pest spectrum of different chemistries*. Abstract from 13th IUPAC International Congress of Pesticide Chemistry, San Francisco, California, United States.

---

### General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

## ABSTRACT

### **How AI localisation in plant tissues determines the targeted pest spectrum of different chemistries**

Anke Buchholz<sup>1</sup> and Stefan Trapp<sup>2</sup>

<sup>1</sup>Syngenta Crop Protection Münchwilen AG, Schaffhauserstrasse 101, 4332 Stein, Switzerland

<sup>2</sup>Technical University of Denmark, Miljøvej 113, 2800 Kongens Lyngby, Denmark

Many pests suck on the vascular system and/or cells of different plant tissues. The sucking target in the cell differs between pests such as Hemiptera (e.g. aphids and whiteflies) or Acari (mites). The agronomic control of sucking pests is most effective with pesticides taken up orally. The cuticle penetration as first crucial step can be modified by formulation whereas the active ingredient (AI) distribution within cells is usually solely determined by physicochemical properties. This passive AI distribution was calculated with the Fick-Nernst-Planck equation implemented in a cell model. The predictions were compared to the measured biological effects against three different arthropods. Test compounds differed in log P (-0.1 to 4.3) and pKa (4.1 to 10.7). Efficacies in different bioassays are discussed with the postulated cellular AI localisation and the individual feeding behaviour of the targeted pest.

136

*max. 150 words*